(13)

United States Government **Department of Energy**

memorandum

Idaho Operations Office

Date: December 23, 1997

Subject: Status of Chemical Safety and Emergency Preparedness Initiatives at the Idaho National Engineering and Environmental Laboratory (AM-OPE-97-048)

To: Federico F. Peña, Secretary of Energy
DOE-HQ, S, 7A-257/FORS

Your Memorandum of August 4, 1997 directed field activities to implement several broad initiatives and to report to you at the end of the year. Attachment 1 is the DOE-ID report and summary and Attachment 2 is the Lockheed Martin Idaho Technologies Company report.

Evaluations pursuant to your initiatives have resulted in many findings which are being prioritized and corrected, and build on other assessments that have been ongoing at INEEL for some time. Some of these ongoing initiatives are driven by regulatory concerns that have arisen over the last few years and are not yet complete, such as a detailed tank inventory assessment which is driven by Resource Conservation and Recovery Act (RCRA) compliance concerns.

There are many issues that are continuing to evolve. Cultural shift takes time and includes worker involvement through programs such as the Voluntary Protection Program (VPP), Integrated Safety Management, and ISO 14001 which INEEL intends to build into the fabric of how we do business. Accordingly, we have taken a comprehensive approach to addressing your initiatives. Incorporating this comprehensive approach will be a lengthy process and is therefore taking longer than anticipated to complete the assessments you requested. The assessments are anticipated to be complete by March 31, 1998.

Three issues continue to surface in the assessments. First, there is a need to strengthen ownership with workers, building managers, supervisors and management. Second, is a need to improve knowledge of and sensitivity to chemical compatibility issues. Third, there needs to be a renewed emphasis on Conduct of Operations training and retraining within the Federal and contractor staff and management with particular emphasis on DOE legacy facilities.

To date none of the findings at INEEL have resulted in imminent hazards, but many are of concern nonetheless and may require reallocation of existing resources or requests for additional funding. In particular, Deactivation & Decommissioning (D&D) needs to be dramatically increased to keep the existing legacy issues from becoming imminent hazards.

In closing, I strongly share your interest in protecting our Federal and contractor workers and the public near our sites. I look forward to working with you to accomplish this task.

J. M. Wilcynski
Manager

ATTACHMENTS

cc (with attachments):

DEC 1997

A. L. Alm, EM-1, 5A-014/FORS
T. R. Lash, NE-1, 5A-143/FORS
F. G. Peters, FM-1, 5A-115/FORS
P. N. Brush, EH-1, 7A-097/FORS

Attachment 1

Secretarial Initiatives on Chemical Safety and Emergency Preparedness

DOE-ID Progress Report

The Idaho National Engineering and Environmental Laboratory (INEEL)

December 1997

Purpose

This assessment was performed at the request of the Secretary of Energy as a Department-Wide initiative based on the Accident Investigation Report for the May 14th explosion in the Plutonium Reclamation Facility (PRF) at Hanford. Secretary Peña specified several areas to be assessed which have been enumerated below as nine specific initiatives that apply to the INEEL.

Scope

This report deals primarily with DOE-ID Operations Office activities and covers the assessment of issues as they relate to the nine specific initiatives enumerated below.

The assessment of DOE-ID was primarily focused on facility personnel through the Facility Directors, the DOE-ID training organization, the DOE-ID Lessons Learned program, and the DOE-ID Emergency Preparedness Program.

The Lockheed Idaho Martin Idaho Technologies Company (LMITCO) assessment was conducted with guidance from DOE-Headquarters and DOE-ID. DOE-ID also participated in the review of contractor operations. Observations from this participation are contained in the LMITCO report.

Summary

The findings and weaknesses uncovered by this assessment within the DOE-ID organization in many cases reflect similar issues highlighted within the M&O contractor programs. Primary areas needing improvement within the DOE-ID Federal organization and programs identified by this assessment include:

- Implementation of conduct of operations refresher training for facility personnel with emphasis on active management of legacy facilities (e.g. facilities which have undergone a change in conventional operations and/or pending transition to D&D)
- Greater emphasis of Federal oversight and performance assessment in the areas of chemical safety, industrial hygiene, identification of potential chemical event precursor conditions, and general legacy vulnerabilities
- Enhanced conduct of operations training with emphasis in chemical handling, chemical compatibility, chemical storage and disposition
- Strengthened ownership and cognizance of specific hazards associated with inactive facilities
- Clarified roles and responsibilities for Emergency Preparedness including Duty Officer training and implementation of "call lists" for Federal personnel including back shift and holiday coverage
- Implementation of more effective processes for dissemination and utilization of "Lessons Learned" and Occurrence Reporting issues

Development of corrective action to resolve these issues will require thoughtful analysis, which builds upon identification of root causes. The intent is to implement corrective action which

properly addresses underlying programmatic weaknesses and thereby ensure substantive, lasting improvement for site-wide management of vulnerabilities on an ongoing basis.

Discussion of Initiatives

Initiative 1 – "DOE site contractors must scrutinize their use or storage of any chemicals that have the potential for explosion, fire, or significant toxic release, and must promptly dispose of unneeded chemicals in accordance with safety requirements and environmental regulations. DOE field offices should develop an approval process to assure the disposal or safe and environmentally compliant storage and handling of such chemicals that are retained." [1]

The Radiological and Environmental Sciences Laboratory (RESL), a government owned government operated laboratory at the INEEL, has formulated corrective actions as a result of the chemical safety assessment conducted in response to Secretary Peña's directive. These findings encompass two main areas at RESL; (1) the proper storage of chemicals and (2) the management and proper disposition of old chemicals. Actions are being taken to correct these physical conditions as they are found.

Most of the findings concern improper storage of chemicals in the different laboratories. RESL management, environmental personnel and safety personnel met to carefully review each finding and to formulate an appropriate course of action to resolve these issues. The main corrective action will entail the development of a chemical storage management system for RESL. In early 1998, a fire protection engineer will assess RESL to help assign fire ratings for each room per the Uniform Building Code (UBC). Subsequently the fire protection engineer will support personnel at RESL to determine the proper storage standard to follow. Furthermore, a procedure is being written to address the proper storage of chemicals at RESL. Updated hazardous material classification reference material is also being obtained to better categorize chemicals with multiple hazards. Chemicals at RESL will be properly labeled to identify unique chemical storage requirements. Training on the storage, ordering and the inventory process for RESL personnel will be given concurrently with the environmental and safety annual refresher in early 1998.

RESL environmental personnel have been addressing excess, old chemicals since 1996. Environmental personnel have been working to properly dispose of these old chemicals. It is estimated that three different shipments (labpacks) will be required to disposition these chemicals. One labpack shipped in October 1997, another will leave RESL in January 1998, the third will be used for the accumulation of cleanup materials from each laboratory within the RESL and the flammable storage room. This last disposition package is scheduled for April 1998 departure. With the disposition of these excess chemicals, RESL will be able to minimize its chemical inventory and reduce potential hazards.

A chemical ordering procedure is being improved to not only include a complete hazard review of each chemical but also assist in the tracking of regulated toxic chemicals (SARA 313 chemical), identifying areas where chemical substitution is appropriate and emphasizing waste minimization/pollution prevention.

DOE-ID has also strengthened its site-wide facility oversight of all Federal and contractor laboratories with full time utilization of a Facility Representative for laboratory safety. This experienced Facility Representative is fully dedicated to oversee and strengthen compliance

with applicable safety, health and environmental requirements at all INEEL laboratories. This dedicated oversight will additionally address laboratory utilization including consolidation of laboratory space and deactivation of inactive areas.

Initiative 2 – "DOE field offices must reassess known vulnerabilities (chemical and radiological) at facilities that have been shutdown, are in standby, are being deactivated, or have otherwise changed their conventional mode of operation in the last several years, and report status to their Program Secretarial Officers and the Assistant Secretary for Environment, Safety and Health within 120 days. Facility operators must evaluate their facilities and operations for new vulnerabilities on a continuing basis." [1]

DOE-ID and the INEEL Management and Operations (M&O) contractor have reviewed known vulnerabilities at the INEEL as identified and tracked by four previous DOE-wide vulnerability assessments. These four key vulnerability assessments are addressed in the "Chemical Safety Vulnerability Working Group Report Management Response Plan," "Plutonium Working Group Report," "Highly Enriched Uranium Working Group Report" and "Spent Nuclear Fuel Vulnerability Assessment;" all of which have corresponding DOE-wide Plans of Action.

Each of the four key vulnerability areas at the INEEL is being actively managed consistent with applicable commitments within the respective assessment reports and action plans. Additionally, as reported previously (See Related DOE-ID Correspondence, #8, below), a number of these actions are being driven by Consent Orders, the Idaho Settlement Agreement, and the Federal Facility Compliance Act (FFCA) Site Treatment Plan. DOE-ID continues to strive for closure of these known vulnerabilities consistent with risk characterization and funding availability.

In addition to the above known vulnerabilities, DOE-ID and the M&O contractor continue to place emphasis on completing several ongoing condition assessments at the INEEL. These activities are complementary to the Secretarial directive of August 4, 1997 and encompass the site-wide tank inventory, legacy sample inventory, and comprehensive environmental compliance audits of all facilities and areas. Coupled with ongoing facility conditions assessments initiated in response to Secretarial safety initiatives, additional vulnerability themes have been highlighted.

Vulnerabilities from the perspective of personnel safety and environmental protection remain an inherent character of INEEL's infrastructure legacy. All too often, mission attention including budget formulation/execution and resultant allocation of program resources are directed to active operations as opposed to inactive facilities/areas awaiting transition to ultimate Deactivation and Decommissioning (D&D). DOE-ID is concerned that additional attention and funding must be directed to the active ownership of legacy facilities including the thorough assessment of vulnerabilities on an ongoing basis and allocation of program funds to more aggressively remediate risks in a prioritized fashion.

Action is therefore being taken at DOE-ID to strengthen facility ownership and training with particular emphasis on vulnerability recognition and management of inactive legacy facilities. Additionally, legacy vulnerabilities are expected to play a more substantial role in budget formulation and appeals to ensure more timely D&D of inactive facilities (i.e. reduction of chemical and radiological vulnerabilities).

Initiative 3 – "DOE and contractor field organizations with operational responsibilities must assess the technical competence of their staffs to recognize the full range of hazards presented by the materials in their facilities, act on results, and implement training programs where needed." [1]

An assessment of the INEEL facilities and DOE-ID personnel related to technical competence in the area of chemical hazards and radioactive waste storage was conducted during October and November 1997. Technical competency of personnel for the purpose of this assessment is considered to be a sufficient level of knowledge commensurate with responsibilities and the training that supports attainment and maintenance of this knowledge. Personnel knowledge regarding actions required under unusual circumstances and emergency situations was also included.

The Federal personnel assigned to the site were confirmed to have adequate knowledge and understanding of their job roles and responsibilities. The facility personnel generally understand the major issues related to operations and discontinued processes and facilities.

Based on personnel responses and interviews, a need to enhance the DOE-ID process to identify job-specific training needs and to institutionalize training in order to maintain the requisite competence of employees is necessary. The following observations were distilled from the information received.

- The roles and responsibilities within DOE-ID for training of needs to be determined and approved by management. This information must be available to all employees.

- A refresher program for Conduct of Operations is needed. This program should emphasize discontinued operations and facilities specifically related to hazard assessments and chemical vulnerabilities. The intent is to provide enough orientation/training to promote a "questioning attitude or culture" among DOE-ID personnel.

- Currently the personnel assigned to the facility operations have adequate knowledge and understanding of their job roles and responsibilities. They appear to understand the issues related to operations and discontinued processes and facilities. However, there appears to be a gap in understanding of waste that contain various chemical constituents and potential reactions due to co-mingling of these constituents. A refresher for chemical vulnerabilities and compatibility would be useful in helping facility personnel to better fulfill their responsibilities in this area. The intent is to provide enough orientation/training to promote a "questioning attitude or culture" among DOE-ID facility personnel which would emphasize identification of precursors to chemical vulnerabilities and potential events. At that point, Subject Matter Experts (SME) can be called in to confirm and resolve any vulnerabilities before events like PFP occur.

- DOE-ID employees need to understand their roles and responsibilities for Emergency Preparedness. A list of personnel who are Duty Officers and facility personnel responsible for emergency actions should be included in the information available to all employees. The training should be based on analysis of positions and responsibilities. A related area of need is the enhancement of DOE-ID procedures (or checklists) for Facility Directors and "call lists" for backshift/holiday coverage of events. An expansion of DOE-ID procedure(s) for general "event management" including courtesy notifications in harmony with Secretary

Peña's initiative on notifications outlined in his directive of August 27, 1997 is likely necessary.

- DOE-ID is identifying critical skills and positions that are required to maintain and provide qualified staff for the current and future mission of the INEEL. Therefore, use of performance-based training criteria, a job task analysis, a needs assessment, and gap analysis is necessary to identify the requisite qualification training or personnel. This process must include review of regulatory requirements (e.g. CFRs, Orders, Permits, court orders, consent orders, office commitments, etc.) and other requirements (e.g. Secretarial Directives) and comparison against the needs, and current training courses provided. The Defense Nuclear Facilities Safety Board Recommendation 93-3 qualification program for various positions will be used as a foundation for this enhanced training initiative.

- Review of training courses using performance-based training criteria will likely require courses to be created, enhanced, or refreshers provided. On the job training, mentoring and other means of providing the necessary knowledge, skills and abilities must also be considered.

Initiative 4 – "DOE field offices must assess their site Lessons Learned and Occurrence Reporting programs to assure that 1) outgoing information is well characterized and properly summarized, and 2) incoming information is thoroughly evaluated, properly disseminated, appropriately implemented, and tracked through formal management systems." [1]

Outgoing information from the INEEL Lessons Learned program is categorized using the DOE Standard for Development of Lessons Learned Programs (DOE-STD-7501-95). No problems were found in categorization of reports for use by other sites. Information disseminated through the Occurrence Reporting and Processing System (ORPS) does need improvement in the causal determinations and characterization of Lessons Learned as reported through ORPS.

The INEEL Lessons Learned Program receives information from a number of sources both within and outside the Department of Energy. This information is passed to SMEs who assist in categorizing the information, which is then sent to facility and other managers. The individual managers are charged with the responsibility of taking appropriate action. Follow-up and use of formal management tracking is left to the discretion of the responsible management and no follow-up is conducted to determine applicability or utilization of the information with the exception of Red Alerts. In the case of information classified as Red Alerts (using the suggested criteria in DOE-STD-7501-95), a single point of contact is assigned to ensure site-wide co-ordination of appropriate corrective or preventive actions. No formal management system exists to follow-up on information other than the Red Alerts.

The INEEL Occurrence Reporting Program does include a method to review data from other facilities; however, implementation of this program element was lacking. This has been corrected subsequent to this review. Follow-up activities are in need of improvement. Some reliance is placed on using non-INEEL efforts, such as the EH Operating Experience Weekly Summary, to identify "big hitter" information.

DOE-ID does not presently have a formal process in place to characterize and summarizing outgoing information from either lessons learned or occurrence reporting processes. However, the guidelines and criteria suggested in DOE-STD-7501-95 have been referenced and used in

recent cases where information has been disseminated through the Lessons Learned List Server.

Reviews of incoming information for applicability and dissemination are performed ad-hoc with no formal process for tracking applicability or utilization. A formal Lessons Learned Program is currently under development and is expected to perform these functions for both lessons learned and occurrence reporting.

Initiative 5 – "EMERGENCY MANAGEMENT DECISION MAKING. Emergency management decisions should be consistent with a conservative assessment of the situation. Emergency management training should emphasize making conservative judgements about facility conditions and personnel exposure in the absence of confirmed data. Key emergency management personnel will be trained on this matter within 60 days and Field Office Managers shall confirm that this milestone has been achieved. Realistic exercises will be conducted and will include and confirm this decision making capability."[2]

NN-60, in collaboration with DOE-ID and LMITCO, conducted emergency management decision making training on October 20 and 21, 1997. The training emphasized event judgment about facility conditions and personnel exposure in the absence of confirmed data. Key emergency facility management personnel were trained. Key individuals unable to be present for the training were given access to a videotape of the course. Additional training is scheduled to ensure that all key personnel are trained to meet the intent of the Secretary's memorandum. Realistic exercises to confirm the incorporation of conservative emergency management decision making are on going and large scale exercises to test the INEEL emergency response cadre are projected after the first of the year.

In addition to directed actions, DOE-ID is currently re-evaluating training and designation of key Federal emergency management personnel. Action is being taken to ensure that all personnel understand their roles and responsibilities.

Initiative 6 – "PROTECTIVE EQUIPMENT AND STAFFING. Personal protective equipment, equipment for field monitoring of chemical hazards, and qualified staff (e.g. industrial hygienist) needed for post accident activities must be readily available. Availability and qualification of critical personal protective equipment will be confirmed within 45 days. Sufficient numbers of qualified personnel must be available at all times for response and post accident activities involving chemical or radiological hazards. Readiness should be periodically verified in accordance with established Departmental requirements." [2]

The INEEL Fire Department has equipment for field monitoring of hazardous materials and has been trained on the proper use of that equipment. Specifically, the fire department is capable of screening for acutely toxic gases, asphyxiants and general screening for combustible gas concentrations and radioactive materials. Monitoring for other gases is to be provided by the facility based industrial hygiene support. Also, the fire department carries with them at all times appropriate fire fighting Personal Protective Equipment (PPE) as well as class A, B and C chemical protective clothing. Fire department capabilities and performance is regularly appraised by DOE-ID staff proficient in fire protection engineering.

A deficiency was identified and addressed with the manner and rigor for providing organized industrial hygiene support to several key emergency response organizations. These included

the Fire Department, Facility Managers, and the Emergency Operations Center planning team. LMITCO has over 20 industrial hygienists on staff who are available on a call out basis for support in the event of an emergency incident. LMITCO has included an on call industrial hygienist with the planning support team which responds to the EOC as well as on call hygienists for facility support. Proper emergency response training on procedures for the industrial hygienists will be completed by December 31, 1997. DOE-ID has one certified industrial hygienist on staff and the ability to provide the proper oversight of contractor operations could be compromised as a result of a reduction in force or other personnel turnover problems.

Hazards assessments have been conducted at each INEEL facility, including an analysis of required PPE based on the hazardous materials associated with those facilities. The INEEL Emergency Plan/RCRA Contingency Facility Plans are compliant with RCRA requirements for PPE at those facilities. The equipment being used by security forces was reviewed for use and adequacy by LMITCO.

Initiative 7 – "PROTECTIVE TREATMENT OF PERSONNEL. Emergency procedures must provide for timely medical attention to injured or potentially exposed personnel; and policy and procedures must exist for the care and continued monitoring of affected personnel for an appropriate period after accidents. Review of such policy and procedures, with participation by local medical authorities and workers, will begin immediately and be completed within 90 days. Realistic exercises will be conducted and will include and confirm that procedures are implemented for the notification and protection of workers in a variety of remote locations (indoors and outdoors) at event onset, and that methods are available to control their sheltering. Security, medical, and other emergency responders must be trained to recognize the health impacts of potential accidents, including the effects of exposures to chemicals and the potential for post-traumatic effects associated with accidents." [2]

DOE-ID has reviewed the status of existing Memoranda of Understanding (MOUs) with three regional medical centers located in Eastern Idaho. Each of the three MOUs were negotiated and signed in 1991 and remain in force at this time. Efforts are proceeding to renew these MOUs in coordination with local medical facilities. No additional requirements are anticipated for the revised MOUs. We anticipate these MOUs will be revised by March 31, 1998.

The existing MOUs provide for timely medical attention to injured or potentially exposed or chemically or radiologically contaminated personnel, communication of all relevant information, and post-event medical monitoring and care of personnel. Exercises are conducted each year with medical center involvement as well as appropriate training for the medical staff at these regional hospitals.

Initiative 8 – "HAZARDS INFORMATION. Procedures must be in place to provide local medical facilities with available information on chemical and radiological hazards, as well as timely qualitative and quantitative exposure information for individuals in the event of an accident. Review and development of these procedures, in coordination with local medical facilities, will begin immediately and will be completed within 90 days. Realistic exercises will be conducted and will include and confirm the ability of DOE contractors to provide local medical facilities with adequate information for a variety of potential accidents to effectively diagnose and treat injured, exposed, or potentially exposed workers." [2]

Members of the on-scene emergency response teams (security, medical, and other emergency responders) are trained to recognize the health impacts of potential accidents, including the effects of exposures to chemicals and the potential for post-traumatic effects associated with accidents. This training is in first aid and the identification of potential symptoms of exposure to radiation and hazardous chemicals. This recognition capability permits the responders to effect a rapid withdrawal from the scene and transition to appropriate medical treatment as the potential exposures warrant.

Each regional medical center has a copy of the complete hazards assessments for the INEEL which identifies information relative to chemical and radiological hazards.

Initiative 9 – "TIMELY NOTIFICATION OF EMERGENCIES AND SIGNIFICANT EVENTS." [3] Provide timely notification to the Headquarters Operations Center, state, tribal, local, and other Federal agencies of all significant events.

At present, the INEEL makes emergency notification to many agencies, the method and content of the notification form having been approved by those agencies several times in the past few years. The five adjacent counties to the INEEL (Bingham, Bonneville, Butte, Clark, Jefferson), the State of Idaho's Emergency Response Commission, State INEEL Oversight Program, State Bureau of Disaster Services, Fort Hall Indian Reservation, Idaho State Police, and the Idaho Transportation Department were asked again on September 25 at a routine quarterly Interagency Planning Group (IPG) meeting to provide DOE-ID with their comments regarding timely notification of all events of concern at the INEEL.

INEEL notifications are made to each agency or organization on a 24 hour/7 day per week basis. When notifications are made by the Warning Communications Center (WCC), a roster and roll-call are used to ensure all required personnel are on the line and properly notified. Additionally, a standard Notification Form (with all known blocks completed) is faxed to the same locations to ensure there is no misunderstanding between what was orally reported by the WCC and what the agencies hear. No messages are left on machines as all counties have 911 call centers for notifications during non-routine working hours (as well as the fax duplication).

The majority of items listed as non-emergency significant events are already receive emergency treatment with corresponding Emergency Action Levels (EALs) at the INEEL. As part of the contract change made to implement DOE O 151.1 with the M&O contractor, the INEEL included less than emergency (significant) events as emergencies and have developed EALs for them. This is a result of agreements with the State of Idaho and an interpretation of what is considered to be an emergency that is somewhat more conservative than that taken in guidance from DOE Headquarters. There are a few of the non-emergency significant events that fall under the DOE 0 232.1 Occurrence Reporting that may now require state and county notification that are not covered by the emergency notification process. This will require the M&O contractor to establish a threshold and consistent method of notification for those events. Those events could be such events as building evacuation of personnel that are not the result of an emergency event, fatality, or multiple injuries, releases of hazardous materials that are not above the statutory limits, loss of special nuclear material, or disruption of operations due to weather conditions.

Related DOE-ID Correspondence

1. Letter from J. M. Wilcynski, U.S. Department of Energy, Idaho Operations Office, to W. John Denson, Lockheed Martin Idaho Technologies Company, "Request for Specific Action, Assessment, and Reporting Based on Vulnerabilities Identified in the May 1997 Hanford Tank Explosion (OPE-SP-97-093)," dated August 14, 1997.

2. Letter from J. M. Wilcynski, U.S. Department of Energy, Idaho Operations Office, to W. John Denson, Lockheed Martin Idaho Technologies Company, "Request for Specific Action, Assessment, and Reporting on Emergency Response Based on Vulnerabilities Identified in the May 1997 Hanford Tank Explosion (OPE-SP-97-100)," dated September 12, 1997.

3. Memorandum from J. M. Wilcynski, U.S. Department of Energy, Idaho Operations Office, to EM-1, EH-1, NE-1 and FM-1, "DOE-ID'S APPROACH TO RESPONDING TO THE MAY 14, 1997 EXPLOSION AT HANFORD'S PLUTONIUM RECLAMATION FACILITY (AM-OPE-97-32)," dated September 19, 1997.

4. Memorandum from J. M. Wilcynski, U.S. Department of Energy, Idaho Operations Office, to John J. Nettles Jr., "Emergency Response Action Items as a Result of Secretary Peña's Directives on Chemical Safety, Lessons Learned and Timely Notifications (OPE-OS-97-117)," dated October 10, 1997.

5. Memorandum from J. M. Wilcynski, U.S. Department of Energy, Idaho Operations Office, to John J. Nettles Jr., "Emergency Response Action Items as a Result of Secretary Peña's Directives on Chemical Safety, Lessons Learned and Timely Notifications (OPE-OS-97-112)," dated October 27, 1997.

6. Memorandum from J. M. Wilcynski, U.S. Department of Energy, Idaho Operations Office, to F. G. Peters, "Chemical Safety and Emergency Management Initiative at INEEL (AM-OPE-97-37)," dated November 7, 1997.

7. Memorandum from J. M. Wilcynski, U.S. Department of Energy, Idaho Operations Office, to John J. Nettles Jr., "Emergency Response Action Items as a Result of Secretary Peña's Directives on Chemical Safety, Lessons Learned and Timely Notifications (OPE-OS-97-146)," dated December 1, 1997.

8. Memorandum from J. M. Wilcynski, U.S. Department of Energy, Idaho Operations Office, to EM-1, EH-1, NE-1 and FM-1, "Assessment of Known Vulnerabilities at INEEL (AM-OPE-97-043)," dated December 5, 1997.

9. Letter from J. M. Wilcynski, U.S. Department of Energy, Idaho Operations Office, to W. John Denson, Lockheed Martin Idaho Technologies Company, "Chemical Safety and Emergency Preparedness Initiatives (AM-OPE-97-044)," Dated December 5, 1997.

Related LMITCO Correspondence

1. Letter, W. J. Denson to J. M. Wilcynski, Subject: STATUS REPORT ON THE IDAHO NATIONAL ENGINEERING AND ENVIRONMENTAL LABORATORY RESPONSE TO THE HANFORD TANK ACCIDENT - WJD-150-97, dated November 14, 1997.

2. Letter, W. J. Denson to J. M. Wilcynski, Subject: REQUEST FOR SPECIFIC ACTION, ASSESSMENT, AND REPORTING BASED ON VULNERABILITIES IDENTIFIED IN THE MAY 1997 HANFORD TANK EXPLOSION – WJD-163-97, dated December 5, 1997.

3. Letter, W. J. Denson to J. M. Wilcynski, Subject: CHEMICAL SAFETY AND EMERGENCY PREPAREDNESS INITIATIVES – WJD-167-97, dated December 15, 1997.

Footnotes

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[1] Memorandum from Federico Peña, Secretary of Energy, to Program Secretarial Officers and Field Office Managers, "DOE RESPONSE TO THE MAY 14, 1997 EXPLOSION AT HANFORD'S PLUTONIUM RECLAMATION FACILITY," dated August 3, 1997.

[2] Memorandum from Federico Peña, Secretary of Energy, to Secretarial Officers and Heads of Field Elements, "LESSONS LEARNED FROM THE EMERGENCY RESPONSE TO THE MAY 14, 1997 EXPLOSION AT HANFORD'S PLUTONIUM RECLAMATION FACILITY," dated August 27, 1997.

[3] Memorandum from Federico Peña, Secretary of Energy, to Heads of Headquarters Elements, Operations and Field Offices Managers and Power Marketing Administrators, "TIMELY NOTIFICATION OF EMERGENCIES AND SIGNIFICANT EVENTS," dated August 27, 1997.

Attachment 2

UPDATED STATUS REPORT

ON THE

INEEL RESPONSE

TO THE

HANFORD TANK ACCIDENT

15 December 1997

Prepared for:

U. S. Department of Energy
Idaho Operations Office
Idaho Falls, Idaho

Prepared by:

Lockheed Martin Idaho Technology Company

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EXECUTIVE SUMMARY

Lessons learned from the May 1997 tank explosion at the DOE Hanford facility, as well as other chemical related incidents across the DOE Complex, indicate significant deficiencies at DOE sites in chemical safety management systems, lessons learned/occurrence reporting systems, identification and management of chemical and radiological vulnerabilities, emergency preparedness, and emergency response. To address these lessons learned at INEEL, DOE-ID instructed LMITCO to perform assessments or actions in nine areas identified in three directives issued by DOE Secretary Pena.

A significant unplanned and unbudgeted effort was required for LMITCO to address these very extensive and comprehensive instructions. However, LMITCO agreed it was necessary to perform these activities because of the serious impacts these events can have on workers and the environment. In fact, LMITCO expanded the scope of effort to ensure that all programmatic issues and specific vulnerabilities would be identified. LMITCO's intention is to perform a thorough review and not a superficial effort. By careful planning and performance, LMITCO is controlling the costs of this effort while still ensuring a superior product.

To perform the requested activities, LMITCO formed a project team composed of five subteams. A total of 25 people have participated on the project team. In addition, approximately 350 managers and individuals contributors were interviewed by the teams or assisted the teams in their reviews. Approximately 3000 manhours have been spent on the project to date, including 1000 manhours examining the conditions in site facilities.

All activities in the DOE-ID instructions have been completed except one – a detailed review of conditions in site facilities to identify specific vulnerabilities. This review will be completed by March 31, 1998.

The assessments and reviews indicate that improvements have been made in chemical safety management in LMITCO facilities in recent years. In addition, site-wide efforts including implementation of the ICMS (an inventory and tracking system), a tank inventory and characterization program, and comprehensive environmental compliance reviews and corrective actions will significantly aid chemical safety management. LMITCO's review to date has not identified any individual chemical vulnerabilities that pose significant safety hazards which are not being addressed. However, widespread vulnerabilities of lesser significance were identified as well as programmatic weaknesses in the chemical safety management system, including the identification and management of chemical vulnerabilities, and in the lessons learned/occurrence reporting systems. No significant weaknesses were identified in the emergency preparedness/emergency response programs; however, improvements have been and are being made to preclude the problems that occurred at Hanford. The following programmatic deficiencies were identified:

- Program documents do not adequately or consistently describe the necessary components of a chemical safety management system, program responsibilities are fragmented and not well coordinated, information in supporting databases is inaccurate, and program requirements are not being consistently implemented.

- Training and knowledge of site personnel is not adequate to ensure all requirements are met.

- Actions are being taken to address radiological and chemical vulnerabilities which were identified in four previously performed assessments; however, chemical vulnerabilities are not being routinely identified and tracked to ensure controls are maintained or vulnerabilities are eliminated.

- Four primary categories of chemical vulnerabilities exist:
  - Tanks with contents not adequately known.
  - Containers of chemicals not adequately labeled.
  - Incompatible chemicals stored inappropriately.
  - Excess chemicals not disposed of in a timely manner.

- The lessons learned program is primarily an information distribution system and does not include adequate requirements for evaluations of applicability, development of corrective actions, and tracking to closure.

Corrective actions for these programmatic deficiencies and for specific facility vulnerabilities are being developed. The corrective actions for programmatic issues will be developed by January 31, 1998. Where possible and appropriate, immediate actions are being taken to correct specific facility vulnerabilities. Corrective actions for all specific vulnerabilities should be developed by March 31, 1998. Lack of funding to implement some corrective actions may be an issue, especially those involving conditions in facilities that are no longer operating.

ACRONYMS

AEDL	Applied Engineering and Development Laboratory
CERCLA	Comprehensive Environmental Response, Compensation, and Liability Act
CFA	Central Facilities Area
CFR	Code of Federal Regulation
CY	Calendar Year
D&D	Decontamination and Decommissioning
DOE	Department of Energy
DOE-ID	Department of Energy Idaho Operations Office
EAL	Emergency Action Level
ES&H	Environmental, Safety, and Health
FY	Fiscal Year
HEU	Highly Enriched Uranium
HQ	Headquarters
ICMS	INEEL Chemical Management System
ICPP	Idaho Chemical Processing Plant
ISFSI	Independent Spent Fuel Storage Installation
INEEL	Idaho National Engineering and Environmental Laboratory
IPA	Independent Performance Assessment
IRC	Idaho Research Center
LMITCO	Lockheed Martin Idaho Technologies Company
MCP	Management Control Procedure
MOU	Memorandum of Understanding
MSDS	Material Safety Data Sheet
OR	Occurrence Report
ORPS	Occurrence Reporting and Processing System
RCRA	Resource Conservation and Recovery Act
RESL	Radiological and Environmental Sciences Laboratory
RWMC	Radioactive Waste Management Complex
SAA	Satellite Accumulation Area
SMC	Specific Manufacturing Capability
SNF	Spent Nuclear Fuel
TAA	Temporary Accumulation Area
TAN	Test Area North
TRA	Test Reactor Area
TSD	Treatment, Storage, and Disposal
VPP	Voluntary Protection Program
WROC	Waste Reduction Operations Complex

UPDATED STATUS REPORT
ON THE
INEEL RESPONSE
TO THE
HANFORD TANK ACCIDENT

1.0 INTRODUCTION

DOE-ID has identified a general requirement to review the current status of chemical safety and emergency preparedness at INEEL with regard to the lessons learned from the May 1997 tank accident at Hanford and the response to that accident. The following letters to LMITCO, and the memoranda from DOE-HQ upon which they were based, identified specific requirements:

1. Letter from John Wilcynski of DOE-ID to John Denson of LMITCO, dated August 14, 1997, subject: "Request for Specific Action, Assessment, and Reporting Based on Vulnerabilities Identified in the May 1997 Hanford Tank Explosion (OPE-SP-97-093)"

   A. Memorandum from DOE Secretary Pena to Field Element Managers, dated August 4, 1997, subject: "DOE Response to the May 14, 1997 Explosion at Hanford's Plutonium Reclamation Facility"

2. Letter from John Wilcynski of DOE-ID to John Denson of LMITCO, dated September 12, 1997, subject: "Request for Specific Action, Assessment, and Reporting on Emergency Response Based on Vulnerabilities Identified in the May 1997 Hanford Tank Explosion (OPE-SP-97-100)"

   A. Memorandum from DOE Secretary Pena to Field Element Managers, dated August 27, 1997, subject: "Timely Notification of Emergencies and Significant Events"

   B. Memorandum from DOE Secretary Pena to Field Element Managers, dated August 27, 1997, subject: "Lessons Learned from the Emergency Response to the May 14, 1997 Explosion at Hanford's Plutonium Reclamation Facility"

Based upon this direction, LMITCO formed a special project to respond to these requirements. A full-time project manager was appointed, and a Project Management Plan was prepared. The members of this project have worked closely with their DOE-ID counterparts to ensure that the LMITCO approach to this project is consistent with the approach of DOE-ID. The mutual goal of LMITCO and DOE-ID is to ensure that the final products will satisfy all the requirements outlined in the memoranda from DOE-HQ.

2.0 LMITCO ORGANIZATIONAL APPROACH

LMITCO organized and staffed five teams to address the requirements identified in the reference letter: conditions and information; programs, policies, and procedures; training and competence; lessons learned and occurrence reporting; and emergency preparedness. These teams have performed assessments to develop a comprehensive picture of the situation at INEEL.

2.1 Conditions and Information

Information concerning chemical storage and known chemical and radiological vulnerabilities has been obtained via a review of LMITCO chemical and radiological data, databases, etc. Walk-downs of facilities at the Test Reactor Area (TRA) have been conducted as a pilot project to validate an approach for examining the entire site. Vulnerabilities (including chemical compatibility) have been reviewed through scenario analysis, based on the identified materials. Any issues requiring immediate attention have been referred to facility management. Methodology has been developed for an examination of the entire site.

2.2 Programs, Policies, and Procedures

An assessment of those programs, policies, and procedures used at the INEEL to ensure safe chemical use, management, storage, and disposal has been performed. Four areas [Central Facilities Area (CFA), Idaho Chemical Processing Plant (ICPP), Idaho Falls Laboratories, and TRA] have been evaluated. Also, certain organizations have been evaluated as to how they plan work involving hazardous materials so that the work can be performed safely, and as to how hazardous materials are safely managed. Organizations and programs which were evaluated include Environmental Restoration, Applied Engineering and Development Laboratory (AEDL), and INEEL Chemical Management System (ICMS).

2.3 Training and Competence

This assessment focused on training programs and methods for personnel responsible for chemical receipt, storage, and handling, as well as personnel responsible for emergency response. Organizations at all nine INEEL facilities/areas have been assessed, utilizing a comprehensive plan which established assessment criteria and lines of inquiry. Facility/area hazard analyses, operating procedures, and training programs/methods have been reviewed to determine current effectiveness. An estimate of employee knowledge has been obtained by interviews with a representative sample of managers, supervisors, and workers.

2.4 Lessons Learned and Occurrence Reporting

An assessment of the effectiveness of the lessons learned and occurrence reporting programs at all nine INEEL facilities/areas has been conducted, utilizing a comprehensive plan which established assessment criteria and lines of inquiry. A survey was used to identify actions taken by individual departments in response to notices disseminated by the lessons learned and occurrence reporting programs. Program coordinators have conducted self-assessments of their programs.

2.5 Emergency Preparedness

Five areas in the Pena memoranda required actions: emergency management decision making, protective equipment and staffing, protective treatment of personnel, hazards information, and timely notification of emergencies and significant events. Actions have been taken in all of these areas.

Program assessments have been performed, and the Report on the Emergency Response to the Event on May 14,1997 at Hanford was reviewed. All findings and concerns were placed on matrix for comparison to conditions at INEEL. A preliminary assessment was completed to determine if any immediate actions based on similar conditions were needed at the INEEL. None were identified, however this will be utilized to enhance the current program.

The assessment of those hazardous materials which previously screened out during the hazard assessment process due to storage quantities below threshold planning quantities was completed on October 31, 1997. Any new hazards found during the site facility walk-downs which were not previously analyzed for emergency response will be addressed as necessary. Facility specific hazardous material data, previously collected during the hazard identification phase of the hazard assessment process, were analyzed for consequences resulting from a release. A draft "default" EAL has been developed and is currently being reviewed by emergency decision makers; it would be used if conditions warrant an emergency classification by the emergency event decision-maker for conditions not addressed in current EALs.

A retraining program has been conducted for all responsible personnel, reinforcing the need for conservative judgments concerning facility conditions and event severity. The current training status was tested during the annual INEEL emergency response exercise in October 1997. This exercise identified weaknesses in demonstrating some emergency management objectives. This exercise was the largest, most comprehensive scenario run at the INEEL to date. Corrective actions are being developed, and several drills are planned to demonstrate accomplishment of the objectives that were missed. Future drills at facilities will include the smaller events that are more likely to happen.

3.0 DOE REQUIREMENTS AND LMITCO RESPONSES

The following requirements have been extracted from the letters to LMITCO dated August 14, 1997 and September 12, 1997, as well as the memoranda from DOE-HQ (see Section 1.0). An initial status report was provided in LMITCO letter WJD-150-97, dated November 14, 1997. The responses provided herein represent an updated report on actions and results to date, as well as integration of the results from the five teams. Additional LMITCO responses will be provided after the recommended additional assessments have been performed and evaluated and when corrective actions have been developed.

3.1 Use or Storage of Chemicals

REQUIREMENTS - Scrutinize the use or storage of chemicals that have the potential for explosion, fire, or significant toxic release, and promptly dispose of unneeded chemicals in accordance with safety requirements and environmental regulations. Report processes used to assure the disposal or safe and environmentally compliant storage and handling of such chemicals that are retained. Evaluate the effectiveness of current practices, identify gaps, and report on corrective actions planned to address the gaps identified.

RESPONSE *– To address these requirements, LMITCO decided a comprehensive review of the chemical safety management system was necessary as well as detailed walk-downs of all LMITCO facilities where chemicals may be used or stored. This decision significantly expanded the scope of actions to be performed, but LMITCO believed this more thorough approach was needed to ensure all individual and systemic chemical safety issues could be identified and corrected.*

LMITCO teams assessed the adequacy of current programs, policies, and procedures in defining a comprehensive chemical safety management system, and performed interviews and walk-downs at all facilities at TRA and at selected facilities at ICPP, CFA, TAN, TWMC, IRC, WERF/WROC, and RESL. The purpose of these interviews and walk-downs was to determine whether programs, policies, and procedures were being understood and implemented. Particular focus was placed on the use and storage of chemicals that have potential for explosion, fire, or significant toxic release and the disposal of unneeded chemicals as directed in the DOE requirement.

These assessment activities were completed with the following conclusions:

- *Chemical safety has improved at INEEL facilities in recent years. Particular improvements were noted at TRA and IRC.*

- *Systems are being developed to address environmental compliance concerns and chemical safety management. These include the ICMS and the tank inventory and tracking system.*

- *Existing programs, policies, and procedures do not adequately define the necessary requirements of a chemical safety management system. The requirements described are inconsistent and fragmented. The systems referenced by the procedures (e.g. System 80, ICMS, chemical labeling) are not designed and maintained to sufficiently support chemical safety.*

- *Chemical safety requirements are not adequately understood or implemented. Employees and managers with chemical safety responsibility do not have sufficient training and experience. Confusion created by procedural and program inadequacies and inconsistencies contribute to these problems. In particular, these problems have led to incorrect information systems and widespread examples of incompatible chemical storage, improper and inadequate labeling, and inadequate storage of flammable and combustible chemicals.*

- *Planning for work involving chemical safety considerations does not consistently involve review and participation by chemical safety and fire safety specialists.*

- *Ownership of areas and activities with landlord and tenant organizations is not sufficiently defined or accepted to ensure chemical safety.*

- *Chemical procurement and distribution is not adequately controlled. As a result, not all chemicals are entered into chemical tracking systems, chemicals are moved without tracking, and orphaned chemicals and excess chemicals have accumulated.*

In addition to the programmatic deficiencies identified, numerous specific deficiencies in chemical storage and use were identified. These deficiencies were either corrected when identified, if possible, or referred to facility management for resolution. All will be tracked to closure.

The detailed walk-downs of all site facilities have not been completed. A methodology has been developed to be used in completing these walk-downs. This methodology was tested in a pilot study at the TRA, and has been modified to reflect lessons learned. A schedule for completing the remaining areas at the site has been developed.

In addition to the methodology, training has been developed to assist the line organizations in identifying potential chemical vulnerabilities. The course is structured to help the managers identify conditions that may lead to undesirable events, such as explosions, fires, and toxic releases.

3.2 Chemical and Radiological Vulnerabilities

REQUIREMENTS - Coordinate with DOE-ID Facility Directors, and reassess known chemical and radiological vulnerabilities at facilities that have been shut down, are in standby, are being deactivated, or have otherwise changed their conventional mode of operation in the last several years, and report status. Report methods utilized to evaluate facilities and operations for new vulnerabilities on a continuing basis.

RESPONSE *– LMITCO decided to expand the scope of these activities to include assessments of vulnerabilities in operating facilities also. This expansion was believed necessary because no current system exists for identifying and tracking chemical vulnerabilities, although the assessments determined that many chemical vulnerabilities are known and are being addressed.*

LMITCO identified three activities necessary to address these requirements: a review of the previous DOE-led assessments of vulnerabilities related to chemicals, HEU, plutonium, and spent nuclear fuel; an assessment of all tanks in site facilities; and walk-downs of the types of facilities identified where chemicals had been used and stored.

Previous Vulnerability Assessments *- Four documented DOE-led vulnerability assessments were reviewed: the Chemical Safety Vulnerability Assessment performed in 1994, the Plutonium Vulnerability Assessment performed in 1994, the Highly Enriched Uranium (HEU) Vulnerability Assessment performed in 1996, and the Spent Nuclear Fuel (SNF) Vulnerability Assessment performed in 1993. The results of this review are summarized here; detailed results were reported in LMITCO letter WJD-163-97, dated December 2, 1997.*

The Chemical Safety Vulnerability Working Group Report Management Response Plan identifies three actions. One of these actions concerns the management of chemically contaminated soils. These soils are adequately managed and controlled under the CERCLA program at INEEL. The second action concerns three specific vulnerabilities. Two of these, reclaimed hexone stored at ICPP and sodium-potassium stored at TAN, have been corrected; the chemicals have been disposed of. The other vulnerability concerns the disposition of 10,000 gallons of dichromate solution contained in a High Level Waste Tank cooling system. This system has been reviewed and is being adequately monitored and maintained. The third action concerned Emergency Management Program documentation, and these inconsistencies have been corrected since 1994.

The Plutonium Working Group Report considered INEEL to be a minor site and had no recommendations.

The Highly Enriched Uranium Working Group Report identified eleven vulnerabilities, three of which were considered as "most significant" in the Management Plan and have formal plans for remediation. The first of these "most significant" vulnerabilities concerns the risk of fire and spread of contamination in the ROVER facility. The ROVER

facility has been undergoing significant remediation over the last three years and is expected to be complete by June 1998. The second vulnerability concerns the integrity of 53 drums containing uranium-233 at the RWMC; this vulnerability has been completely remediated. The third vulnerability concerns integrity and spacing issues of uranium-233 stored under soil at the Transuranic Storage Area at the RWMC. A building has been completed over the storage area, and these materials will be remediated as part of the Advanced Mixed Waste Treatment program. Of the remaining 8 vulnerabilities, four remain open: two concern the ROVER facility, and one concerns seismic stability of fuel storage in Building CPP-651 which will be remediated when fuel movement plans are completed and material is moved elsewhere. The last open vulnerability concerns numerous small quantities of uranium in aging facilities; each location is being evaluated, and suitability should be determined by September 1998.

The Spent Nuclear Fuel Vulnerability Assessment identifies several buildings at INEEL that store Spent Nuclear Fuel. Vulnerabilities were identified at each of these facilities. These vulnerabilities have been incorporated into an action plan that is reviewed quarterly. These vulnerabilities have received, and continue to receive, program support and are managed by an active DOE-Headquarters and DOE-ID program office. One vulnerability concerning spent fuel in the Advanced Reactivity Measurements Facility / Coupled Fast Reactivity Measurement Facility (ARMF/CFRMF) has been eliminated with the removal of fuel from that facility. Additional efforts are underway to move the Three Mile Island fuel debris to a Nuclear Regulatory Commission licensed facility at the Idaho Chemical Processing Plant. Several vulnerabilities are associated with wet storage of spent fuel in the CPP-603 building. These materials are being moved as rapidly as possible to other facilities and to dry storage. The removal of many of these vulnerabilities are also commitments to the State of Idaho and contained in the Governor's agreement and subject to court enforcement if the agreements are not met.

***Tank Assessments** – An assessment of all tanks at INEEL was previously initiated by LMITCO to facilitate and ensure compliance with environmental protection requirements. This assessment involves a complete inventory and development of a database of tanks and tank contents. Although not directed toward chemical safety, the results of this tank assessment were used as the basis of an assessment for chemical safety of the tanks. A methodology of reviewing the tank inventory database, examining facility drawings, interviewing facility personnel, and examining the environments of tanks that could be vulnerabilities was developed in a pilot performed at TRA. These reviews identified uncharacterized or not fully characterized tanks (59 at TRA), empty tanks that had not been cleaned, and resin tanks where hydrogen buildup may be occurring from radiolysis as potential vulnerabilities that must be addressed. In most cases, no activities or funding have been identified to characterize or disposition these tanks.*

***Facility Walk-downs** – The facility walk-downs were discussed in section 3.1 above. The pilot was performed at TRA but walk-downs were also performed at other site facilities by the other assessment teams. The vulnerabilities identified by these assessments were in three categories:*

- *Containers of chemicals not adequately labeled.*
- *Incompatible chemicals stored together.*
- *Excess chemicals not disposed of (many have expired or have been partially used).*

As noted in section 3.1, a schedule is being developed for completing the facility walk-downs and identifying the specific potential vulnerabilities in these categories.

Another activity being performed by LMITCO, independent audits of site facilities for environmental compliance concerns, also supports the chemical safety assessment activities. The results of these audits are being reviewed for chemical safety vulnerabilities.

3.3 Technical Competence of Staff

REQUIREMENTS - Assess the implementation status and effectiveness of methods used to assess the technical competence of staffs to recognize the full range of hazards presented by the materials in the facilities. Include an overview of the methods used when reporting on their implementation status and effectiveness.

RESPONSE *- Assessments were performed at TRA, ICPP, CFA, Idaho Research Center (IRC), Radiological and Environmental Sciences Laboratory (RESL), Radioactive Waste Management Complex (RWMC), Waste Reduction Operations Complex (WROC), Specific Manufacturing Capability (SMC), and Test Area North (TAN). The assessments evaluated technical competence with regard to chemical hazards safety (including liquid radiological waste) of facility/area management, operations, maintenance, and technical support personnel. Technical competency for the purpose of this assessment has been interpreted as personnel level of knowledge and the training that supports attainment and maintenance of this knowledge. Personnel knowledge regarding actions under unusual circumstances and emergency situations was included. Objectives and Criteria and lines of inquiry were developed to determine personnel technical competency. Assessments included interviews with a representative sampling of personnel at the Department Manager, Supervisor, and worker level, review of supporting documentation, and walkthroughs of facilities.*

DISCUSSION OF RESULTS *- Operations personnel at all INEEL facilities demonstrated adequate/sufficient levels of technical competence consistent with the objectives and criteria of this assessment; however, the assessments described in section 3.1 above identified that chemical safety requirements are not adequately known or understood. This is particularly true for the storage of incompatible chemicals. Formal training programs are presented to support personnel technical competency, but the training and experience of many personnel with chemical safety responsibilities is deficient to varying degrees. Some local deficiencies and patterns of inconsistency between facilities were also noted.*

The level of knowledge on the "full range of hazards" is not equally strong in all areas. Specifically, a substantial number of laboratory personnel were not familiar with the hazards associated with the chemicals stored in their laboratory as required by 29CFR1910.1450. However, all personnel can readily locate or access MSDS documentation that contains the needed information. Additionally, some personnel demonstrated a lack of knowledge of chemical storage and would benefit from improved procedures and additional training in this area.

Safety, in general, appears to be an increasing part of the facilities' culture. This appears to be due, in large part, to the Voluntary Protection Program (VPP). However, the degree of "Safety Culture" varies from facility-to-facility. Facility personnel appear to be generally knowledgeable and competent based on assessment team observations, program reviews, and personnel interviews. Chemical, radiological, and industrial safety are reinforced on a continuing basis through safety and all hands meetings, pre-job/pre-evolution briefs, and management and ES&H walk-throughs. In addition, facilities are in the process of reviewing chemical usage and entering chemicals into the INEEL Chemical Management System (ICMS). The progress of chemical entry into the ICMS varies from initial stages of data entry to complete inventories captured by ICMS.

In general, INEEL personnel are required to complete a significant number of training and qualification activities related to their job position. All personnel are required to complete LMITCO Hazards Communications training that meets the requirements of 29 CFR 1910.1200 as well as facility-specific Hazards Communications training. In addition, any work that requires a work order or laboratory experiment plan contains information regarding safety hazards. Personnel with responsibility for work at CERCLA and TSD facilities are required to complete the appropriate HAZWOPER training and field experience requirements in accordance with 29 CFR 1910.120.

3.4 Lessons Learned and Occurrence Reporting Programs

REQUIREMENTS - Assess the effectiveness of the LMITCO Lessons Learned and Occurrence Reporting programs by determining whether incoming information (i.e. the Hanford tank explosion) is thoroughly evaluated, properly disseminated, appropriately implemented, and tracked through formal management systems. For LMITCO events, assess the LMITCO Lessons Learned and Occurrence Reporting programs to determine if outgoing information is well characterized and properly summarized. Report results of these assessments.

***RESPONSE** - The LMITCO Lessons Learned and Occurrence Reporting (ORPS) programs were assessed, using the following methods to collect information for evaluation:*

- *The responsible Lessons Learned and ORPS program coordinators conducted a self-assessment of their program's compliance with requirements.*

- *Independent Performance Assessment personnel surveyed the field implementation/utilization of the Lessons Learned and ORPS programs at nine major LMITCO facilities at the INEEL. Twenty-five people were interviewed, representing a cross-section of personnel with varying lessons learned information needs and job assignments, including: middle management; field supervisors; and individual contributors in the functional areas of facility operations, project management, construction management, facility landlord, maintenance work planning, industrial safety, and radiological safety.*

- *LMITCO department-level managers provided feedback on their organization's utilization/actions taken as a result of receiving the Hanford chemical tank explosion lessons learned information.*

***DISCUSSION OF RESULTS** - The referenced DOE correspondence identifies additional emphasis and program elements not previously required for lessons learned programs. The overall effectiveness of the LMITCO Lessons Learned Program is judged less than adequate to fulfill all the program elements identified in this correspondence. The current Lessons Learned Program works on the philosophy of providing information to applicable personnel, thus presenting recipients with the opportunity to benefit from the information received. Receiving management with authority, responsibility, and resources is ultimately responsible for taking the appropriate actions associated with the information received. The current lessons learned process is not involved in the utilization of the information provided (i.e., feedback or tracking of corrective actions). The receipt, resulting actions, implementation, and feedback resulting from lessons learned information is typically voluntary and informal; however, the stringency of actions taken and the tracking of those actions is more significant for "Red" lessons learned. A large gradient of program compliance, implementation, and effectiveness was identified, ranging from pockets of excellence to less than adequate compliance. Interviews with line personnel frequently demonstrated a lack of application/utilization of lessons learned information (e.g., topics of assessment, work planning, and hazard identification).*

The effectiveness of the LMITCO Lessons Learned Program to address the Hanford event was judged compliant with MCP-192, "Lessons Learned", and directions in the referenced DOE correspondence. The preliminary lessons learned information received from Hanford was expeditiously processed and disseminated as a Yellow/Caution lessons learned document and disseminated to 194 applicable personnel. The potential significance of the event was not recognized when preliminary information was first released. The subsequent final lessons learned documents received by LMITCO were processed as a Red/Urgent alert. The Lessons Learned Program requested and received the identification and assignment of an issue owner to coordinate and track the LMITCO actions. These documents were expeditiously disseminated to provide the final lessons learned and immediate mitigating actions identified by the issue owner. This document was distributed to 466 personnel including all managers and additional personnel. A field survey found the lessons learned information was received and utilized by applicable technical personnel. A follow-on survey of all department-level managers

identified the lessons learned information disseminated had been received and was currently being used to effect positive change. The response to this event was better than most but still lacked a coordinated site-wide effort or requirements for specific evaluation and response. The assessments described in this report provide the desired response.

Fifty-five occurrence reports were reviewed to check characterization (occurrence category and nature of occurrence) and summarization quality of outgoing information. All 55 reports correctly characterize the occurrence category and nature of occurrences. No problem was identified with LMITCO's characterization of outgoing information on ORPS. The summarization result indicates room for improvement in the description of occurrence summaries and a definite need for improvement in the description of cause summaries. Since summary information is frequently the basis for determining if an occurrence report (OR) is applicable and warrants further review, it is necessary to include the most significant information within the first 10 lines of both these report fields (description of occurrence and cause). Approximately 9 percent of the report descriptions of occurrence summaries were too vague to determine what had occurred. A much larger percentage of the description of cause summaries conveyed essentially meaningless information for trying to determine the reason for an occurrence. It should be emphasized that, taken as a whole, the reports adequately describe what occurred and why it occurred; just the summary information needs improvement. A contributor to the problem was a low knowledge of the requirement to use a qualified report writer.

Review of similar facility incoming occurrence reports for INEEL applicability could not be demonstrated to have occurred; therefore, evaluation of incoming occurrence reports is an area that needs to be improved and/or documented. Many of the widely applicable occurrence reports are already addressed through the lessons learned program and the Operating Experience Weekly Summary program.

3.5 Emergency Management Decision Making

REQUIREMENTS –Emergency management training should emphasize making conservative judgements about facility conditions and personnel exposure in the absence of confirmed data; key emergency management personnel shall be trained on this matter. Realistic exercises shall be conducted and will include and confirm this decision-making capability.

***RESPONSE** – The Office of Nonproliferation and National Security (NN-60), in collaboration with the Idaho Operations Office and LMITCO, conducted emergency management decision-making training on October 20 and 21, 1997. The training emphasized conservative event judgment about facility conditions and personnel exposure in the absence of confirmed data. Key emergency facility management personnel were trained. Key individuals unable to be present for the training will have access to a videotape of the course. Additional training will be scheduled to ensure that all key members are trained to meet the intent of the Secretary's memorandum. Realistic exercises to confirm the incorporation of conservative emergency management decision making are in development.*

3.6 Protective Equipment and Staffing

REQUIREMENTS - Availability and qualification of critical personal protective equipment shall be reviewed. Sufficient numbers of qualified personnel must be available at all times for response and post-accident activities involving chemical or radiological hazards. Readiness should be periodically verified.

***RESPONSE** – The INEEL Fire Department has equipment for field monitoring of hazardous materials and has been trained on the proper use of that equipment. Specifically, the fire department is capable of screening for acutely toxic gases, asphixiants and general screening for combustible gas concentrations at the lower explosive level. Monitoring for other gases is to be provided by the facility based industrial hygiene (IH) support. Also, the fire department carries with them at all times appropriate fire fighting Personal Protective Equipment (PPE) as well as class A, B, and C chemical protective clothing.*

A deficiency was identified with the manner and rigor for providing organized IH support to several key emergency response organizations; these include the Fire Department, Facility Managers, and the EOC planning team. LMITCO has over 20 IHs on staff who are available on a call out basis for support in the event of an emergency incident. In the interim, LMITCO has included an on call IH with the planning support team as well as on call IHs for facility support. IH support to the fire department will be provided through the facility having the emergency incident. Proper emergency response training on procedures will be required for IHs prior to their formal inclusion in the duty rotation; this action will be completed by January 31, 1998.

Hazards assessments have been conducted at each INEEL facility, including an analysis of required PPE based on the hazardous materials associated with those facilities. The PPE used by security forces is has been reviewed for use and adequacy.

3.7 Protective Treatment of Personnel

REQUIREMENTS - Ensure that emergency procedures provide for timely medical attention to injured or potentially exposed personnel, and that policy and procedures exist for the care and continued monitoring of affected personnel for an appropriate period after accidents. Verify that procedures will notify and protect workers in a variety of remote locations (indoors and outdoors) at event onset, and that methods are available to control their sheltering. Verify that emergency responders are trained to recognize the health impacts of potential accidents, including the effects of exposures to chemicals and the potential for post-traumatic effects associated with accidents.

RESPONSE –

- *A review has been conducted on the policy and procedures for protective treatment of personnel. The Memoranda Of Understanding (MOU) with local hospitals are in place, and these are tested by exercises at least once a year. LMITCO has conducted 5 drills this year in which a chemical hazard was either the initiator of the response or a chemical release was a potential consequence that required analysis of potential impact. Procedures for taking protective actions (evacuation and sheltering) are tested in INEEL facilities during drills and exercises. The 5 chemical-related drills included transient population notification, response, and protective actions. The Medical Support Director establishes and maintains communications with the duty doctor, medical personnel on the facility, and the CFA dispensary to monitor, coordinate, and support treatment provided to all injured personnel. He also establishes and maintains communications with area hospitals as necessary. The checklist does not specifically require the Medical Support Director to inquire on the nature of injuries or exposures (chem and rad) if known or a potential. It does not require the Medical Support Director to communicate this type of information to local hospitals, although it is probably a routine protocol for this information to be provided if known.*

- *As part of the continuous improvement process in emergency management the current INEEL MOUs with medical facilities at Columbia Eastern Idaho Regional Medical Center, Bannock Regional Medical Center, and Columbia Presbyterian/St. Lukes Medial Center will be modified. The current MOUs with local hospitals were signed in 1991 and the Columbia Presbyterian/ St. Lukes MOU was recently signed in preparation for NRC license transfer of the Independent Spent Fuel Storage Installation (ISFSI) at Ft. St. Vrain, Colorado to DOE. No new requirements are anticipated to be added for the renewed MOUs as the existing MOUs provide for timely medical attention to injured or potentially exposed or chemically or radiologically contaminated personnel, communication of all relevant information and post-event medical monitoring and care of personnel. Changes are anticipated to align as applicable to the INEEL with the new Emergency Management Guide 151.1-IV 3-2 topical subject Offsite Response Interfaces.*

3.8 Hazards Information

REQUIREMENTS - Ensure that procedures are in place to provide local medical facilities with available information on chemical and radiological hazards, as well as timely qualitative and quantitative exposure information for individuals in the event of an accident. Conduct exercises to confirm the ability of LMITCO to provide local medical facilities with adequate information, for a variety of potential accidents, to effectively diagnose and treat injured, exposed, or potentially exposed workers.

***RESPONSE** - Hospitals having MOUs with INEEL are provided copies of the INEEL Emergency Plan / RCRA contingency plan as required by RCRA; these plans contain hazards information. Additionally, training on the INEEL hazards is offered and*

provided to local hospitals. During accidents, information is provided to mediacl facilities as described in 3.7 above.

3.9 Timely Notification of Emergencies and Significant Events

REQUIREMENTS - Review the criteria (e.g. emergency action levels) used to determine emergency and significant event recognition and categorization to ensure that all reasonable event indicators are adequately covered by procedures and that procedures reflect an expeditious process. Review training procedures and conduct "refresher" training and drills for personnel responsible for event categorization, notification, or reporting, to ensure that these personnel fully understand the Departmental emphasis on timely event classification and notification.

RESPONSE –

- *Review of the criteria used to determine emergency and significant event recognition and categorization for Emergency Action Levels (EALs) was completed by the LMITCO Emergency Preparedness Department prior to NN-60 review of the INEEL. EALs are also reviewed on an annual basis as part of the emergency preparedness program review and concurred on by INEEL facility management. LMITCO has recently completed a review of the basis for all the EALs as well as a review of the EALs themselves.*

  LMITCO and DOE-ID have been evaluating risk consequence to see if a best management practice is appropriate for hazards assessments (HAs) below threshold quantities. As a result of this concern, LMITCO has evaluated the need for a lower trigger level for emergency events which are initiated by a chemical release. Review of facility specific hazardous material data has been analyzed that will indicate to emergency responders and facility personnel what amount of a hazardous material, if released, would result in a concentration at 30 meters of an Emergency Response Planning Guide-2 or equivalent. This process will be provided to all INEEL facilities with corresponding EALs and included in the INEEL Emergency Plan / Resource Conservation and Recovery Act Contingency Plan facility specific addenda as soon as possible.

- *NN-60 was on site on September 16-17, 1997 to review emergency action levels and associated event categorization criteria with the potential for significant offsite consequences from radiological and non-radiological hazardous materials. NN-60 completed their review without major findings or concerns.*

- *Review of training procedures and "refresher training" for personnel responsible for event categorization, notification, or reporting was completed on September 17, 1997. The INEEL has completed the annual re-qualification training process for all LMITCO and DOE-ID emergency response personnel. Classification and notification are included in the LMITCO training process for all personnel who serve in the Emergency Response Organization (ERO) or for those who serve as DOE-ID*

Management Duty Officers (MDOs). In addition, facility emergency planners have presented a special training class for LMITCO Emergency Coordinators / Emergency Action Managers (ECs/EAMs). Included in this training was a review of specific lessons learned on the Hanford Plutonium Reclamation Facility (PRF) event.

Also, each month at a different INEEL facility, ERO personnel responsible for classification and notification are drilled with a scenario which requires classification and categorization of an event. Actual demonstration of the notification process with the local communities, the State of Idaho Communications Center, the Fort Hall Indian Reservation, Idaho State Police, and the Department of Energy-Headquarters (DOE-HQ) Emergency Operations Center (EOC) is required. This process keeps personnel proficient in classification and notification processes and also tests the notification equipment and pathway. Existing memoranda of understanding with 3 regional medical centers are being reviewed for additional considerations as a result of the PRF event.

- *At present, the INEEL makes emergency notifications to many agencies, the method and content of the notification form having been approved by those agencies several times in the past few years. The five adjacent counties to the INEEL (Bingham, Bonneville, Butte, Clark, Jefferson), the State of Idaho's Bureau of Hazardous Materials, State INEEL Oversight Program, State Bureau of Disaster Services, Fort Hall Indian Reservation, Idaho State Police, and the Idaho Transportation Department were asked again on September 25, 1997 at a routine quarterly Interagency Planning Group meeting to provide DOE-ID with comments regarding timely notification of all events of concern at the INEEL.*

  INEEL notifications are made to each agency or organization on a 24 hour/7 day per week basis. When notifications are made by the Warning Communications Center, a roster and roll-call are used to ensure all required personnel are on the line and properly notified. Additionally, a standard Notification Form (with all known blocks completed) is faxed to the same locations to ensure there is no misunderstanding between what was orally reported by the WCC and what the agencies received by telefax. No messages are left on machines as all counties have 911 call centers for notifications during non-routine working hours. The State Communications Center is manned 24 hours per day as is the Fort Hall Indian Reservation Dispatch Center.

  All LMITCO ECs/EAMs/EDs and Idaho Falls Facility Managers were briefed regarding timely notification processes directed by Secretary Peña's memoranda. LMITCO has also identified various events that warrant immediate notification that are non-emergencies. A formal revision to the LMITCO Occurrence Reporting procedure is being developed to standardize oral notification content. Training for all personnel responsible for Occurrence Reporting will follow.

- *The 1997 INEEL Emergency Readiness Assurance Plan (ERAP) was submitted to NN-60 on November 30, 1997. The status of refresher training and drills for all*

personnel responsible for event categorization, notification, or reporting was included in this year's ERAP.

- *The majority of items listed as non-emergency significant events in the subject memoranda are already considered to be emergencies with corresponding EALs at the INEEL. As part of the contract change made to implement DOE Order 151.1, the INEEL included less than emergency (significant) events as emergencies and has developed EALs for them. This is a result of agreements with the State of Idaho and an interpretation of what is considered to be an emergency that is somewhat more conservative than that taken in the subject memoranda. There are a few of the non-emergency significant events that fall under DOE 0rder 232.1 Occurrence Reporting that may now require state and county notification that are not covered by the emergency notification process. This will require that DOE-ID and LMITCO develop a consistent method of notifications for those events. Examples of such events may be a building evacuation of personnel that is not the result of an emergency event, fatality, multiple injuries, releases of hazardous materials that are **not** above the statutory limits, loss of special nuclear material, or disruption of operations due to weather conditions.*

  Notification of non-emergency significant events that "may result in concern by the State of Idaho, tribal, local officials, press, or general population or could damage the credibility of the Department or that may result in inquiries to Headquarters" will be determined on a case by case basis. LMITCO and DOE-ID are developing a brief notification form that will accommodate the direction for oral notifications.

4.0 PROJECT COMPLETION AND CORRECTIVE ACTIONS

Two tasks remain for completion of this assessment project: (1) completion of detailed reviews of site facilities to identify specific chemical safety vulnerabilities, and (2) development of corrective actions to address the programmatic issues identified in this report and the specific chemical safety vulnerabilities.

A schedule to complete facility reviews is being developed. The results of the tank assessment project are needed to support these reviews. The tank assessment project is scheduled for completion by February 15, 1998. It is anticipated that the facility reviews will be completed by March 31, 1998.

LMITCO believes all programmatic issues have been identified even though the facility reviews have not been completed. These facility reviews are expected to identify additional specific vulnerabilities that support the conclusions in this report. LMITCO is currently evaluating options for corrective actions. These corrective actions will focus on:

- Revising / developing chemical safety program documents.
- Training on chemical safety program requirements.
- Improvements in labeling of chemicals, control of chemicals, accuracy of databases, and adherence to requirements.
- Disposal of excess chemicals.
- Identifying, tracking, and correcting chemical safety vulnerabilities.
- Improvements in the lessons learned and occurrence reporting system.
- Continued improvements in emergency preparedness and emergency response.

Some of the corrective actions could involve substantial unbudgeted costs, particularly those actions required to correct conditions in facilities that are not longer operating. Where appropriate, the lack of funding to implement the corrective actions will be identified. The programmatic corrective actions should be developed by January 31, 1998. The corrective actions for specific vulnerabilities are being developed as the conditions are identified. Where possible and appropriate, immediate corrective actions are being taken. All corrective actions for facility-specific vulnerabilities should be identified by March 31, 1998.